CLAIMS

WHAT WE CLAIM IS:

1. The tear-resistant laminate, comprising:

an elastic polymeric film having a top surface and a bottom surface;

a first nonwoven web formed of nonelastic thermoplastic fibers and having a predefined machine direction and a predefined transverse direction, said web having an extensible elongation value in a range of from about 20% to about 200% and an ultimate force to break of greater than 1500 g/in. in said transverse direction, a top surface and a bottom surface, said bottom surface of the first nonwoven web being bonded to the top surface of said elastomeric film;

a second nonwoven web formed of nonelastomeric thermoplastic fibers and having predefined machine and transverse directions, a predefined extensible elongation value and an ultimate force to break value in said transverse direction that is substantially equal to said extensible elongation values and said force to break value of the first nonwoven web, a top surface and a bottom surface, said top surface of the second nonwoven web being bonded to the bottom surface of the elastomeric film;

said tear resistant laminate having, in a direction aligned with the transverse direction of the first and second nonwoven webs, an elongation value greater than said extensible elongation values of the first and second webs and an ultimate force to break of at least 3000 g/in.

2. The tear resistant laminate, as set forth in Claim 1, wherein said first and said second nonwoven webs are formed of randomly

deposited nonelastomeric thermoplastic fibers, at least about 10% of said fibers having approximately equal softening temperatures.

3. The tear resistant laminate, as set forth in Claim 2, wherein from about 2% to about 50% of said thermoplastic fibers comprising each of the first and second nonwoven webs are skewed in a direction greater than about 10° from the machine direction of the respective nonwoven web.

4. The tear resistant laminate, as set forth in Claim 2, wherein said thermoplastic fibers comprising the first and second nonwoven webs have a mass divided by length value of at least about 1.5 denier.

5. The tear resistant laminate, as set forth in Claim 1, wherein said first and second nonwoven webs are formed of randomly deposited polyolefin fibers.

6. The tear resistant laminate, as set forth in Claim 5, wherein said polyolefin fibers are spun bond polypropylene fibers and said first and second webs have a basis weight of from about 14 to about 60 g/m^2.

7. The tear resistant laminate, as set forth in Claim 1, wherein said elastic polymeric film is a metallocene-based low density polyethylene film.

8. The tear resistant laminate, as set forth in Claim 7, wherein said metallocene-based low density polyethylene film has a basis weight of from about 18 g/m^2 to about 100 g/m^2.

9. The tear resistant laminate, as set forth in Claim 1, wherein said elastic polymeric film is a block copolymer blend.

10. The tear resistant laminate, as set forth in Claim 9, wherein said elastic polymeric film has a basis weight of from about 30 g/m^2 to about 100 g/m^2.

11. The tear resistant laminate, as set forth in Claim 1, wherein said elastic polymeric film has elastic elongation properties greater than the extensible elongation values of the first and second nonwoven webs and a set of less than 25% when stretched 50%.

12. The tear resistant laminate, as set forth in Claim 1, wherein said elastic polymeric film is perforated.

13. The tear resistant laminate, as set forth in Claim 1, wherein said elastic polymeric film has a Dart Impact value of at least 400 g.

14. The tear resistant laminate, as set forth in Claim 1, wherein the bond between the bottom surface of the first nonwoven web and the top surface of the elastic polymeric film, and the bond between the top surface of the second nonwoven web and the bottom surface of the elastic polymeric film each comprise a mutually bonded surface area between respective contiguous web and film surfaces of at least 3.0% of the total contiguous surface area.

15. The tear resistant laminate, as set forth in Claim 1, wherein said first nonwoven web comprises a composite structure formed of two or more layers of a nonwoven fabric bonded together.

16. The tear resistant laminate, as set forth in Claim 1, wherein said second nonwoven web comprises a composite structure formed of two or more layers of a nonwoven fabric bonded together.

17. The tear resistant laminate, as set forth in Claim 1, wherein said elastic polymeric film comprises a plurality of layers of elastic polymeric film, said top surface of the elastic polymeric film being the top surface of the uppermost layer of the plurality of layers, and said bottom surface of the elastic polymeric film being the bottom surface of the lowermost layer of the plurality of layers.

18. A method for forming a tear resistant laminate, comprising:

(a) selecting an elastic polymeric film having a basis weight of from about 18 g/m^2 to about 100 g/m^2;

(b) selecting a first precursor nonwoven web formed of randomly disposed nonelastomeric thermoplastic fibers and having predefined machine and transverse directions;

(c) heating the first precursor nonwoven web to a temperature between the softening temperature and the melting temperature of at least 10% of the thermoplastic fibers comprising the first precursor nonwoven web;

(d) drawing the heated first precursor nonwoven web under tension in said predefined machine direction to cause the first precursor nonwoven web to be longitudinally elongated in said machine direction and consolidated laterally in said predefined transverse direction, thereby forming a first nonwoven web;

(e) cooling the first nonwoven web whereby the first nonwoven web is consolidated in said transverse direction, and has an extensible elongation value in said transverse direction of from about 20% to about 200% and an ultimate force to break in said transverse direction of greater than about 1500 g/in.;

(f) selecting a second precursor nonwoven web formed of randomly disposed nonelastomeric thermoplastic fibers and having predefined machine and transverse directions;

(g) heating the second precursor nonwoven web to a temperature between the softening temperature and the melting temperature of at least 10% of the thermoplastic fibers comprising the second precursor nonwoven web;

(h) drawing the heated second precursor nonwoven web under tension in said predefined machine direction to cause the second precursor nonwoven web to be longitudinally elongated in said machine direction and consolidated laterally in said predefined transverse direction, thereby forming a second nonwoven web;

(i) cooling the second nonwoven web whereby said second nonwoven web is consolidated in said transverse direction, and has an extensible elongation value in said transverse direction of from about 20% to about 200% and an ultimate force to break in said transverse direction of greater than about 1500 g/in.;

(j) bonding a bottom surface of the first nonwoven web to the top surface of the elastomeric film and simultaneously bonding the top surface of the second nonwoven web to the bottom surface of the elastomeric film.

19. The method for forming a tear resistant laminate, as set forth in Claim 18, where said bonding a bottom surface of the first nonwoven web to the top surface of the elastomeric film and simultaneously bonding the top surface of the second nonwoven web to the bottom surface of the elastomeric film includes bonding the respective webs and the elastomeric film together by thermal fusion with the addition of an applied pressure to produce mutually bonded surface areas between the respective adjacently disposed web and film surfaces comprising at least about 3.0% of the total adjacently disposed surface areas.

20. The method for forming a tear resistant laminate, as set forth in Claim 18, wherein said bonding a bottom surface of the first nonwoven web to the top surface of the elastomeric film and simultaneously bonding the top surface of the second nonwoven web to the bottom surface of elastomeric film includes ultrasonically heating spaced-apart preselected portions of the webs and film to produce mutually bonded surface areas between the respective adjacently disposed web and film surfaces of at least 3.0% of the total adjacently disposed surface areas.

21. The method for forming a tear resistant laminate, as set forth in Claim 18, wherein said selecting an elastic polymeric film includes perforating the elastic polymeric film prior to bonding with the bottom surface of the first nonwoven web and the top surface of the second nonwoven web.

22. The method of forming a tear resistant laminate, as set forth in Claim 18, wherein said method includes selecting at least one precursor nonwoven web formed of randomly disposed nonelastomeric thermoplastic fibers, heating the at least one precursor web to a temperature between the softening temperature and the melting temperature of at least 10% of the fibers comprising the additional nonwoven web, drawing the heated at least one additional web whereby the additional web is elongated longitudinally and consolidated laterally, cooling the at least one additional web thereby forming an additional nonwoven web having a defined elastic elongation value and an ultimate force to break value in the transverse direction substantially equal to said elastic elongation value and ultimate force to break value in the transverse direction of said first and second nonwoven webs, and bonding said at least one additional nonwoven web to one of said first and second webs.

23. The method for forming a tear-resistant laminate, as set forth in Claim 22, wherein said bonding said at least one additional nonwoven web to one of said first and second webs is carried out prior to bonding a bottom surface of the first nonwoven web to the top surface of the elastomeric film and simultaneously bonding the top surface of the second nonwoven web to the bottom surface of the elastomeric film.

24. The method of forming a tear resistant laminate, as set forth in Claim 18, wherein said selecting an elastic polymeric film includes selecting an elastic polymeric film comprised of multiple layers of elastic polymeric film.